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DISCUSSION AND CORRESPONDENCE USE OF THE TERMS "EROSION," "DENUDATION," "CORRASION" AND "CORROSION"

I AM interested in Mr. Bissell's plea for a more precise term, in geological literature, of the terms, "erosion," "denudation," "corrosion" and "corrasion." Without entering into a discussion of the merits of various past definitions of these words, may I presume to express my own views on this subject?

"Erosion" means "gnawing away," and is properly used to include all natural processes which have their origin at the earth's surface and which involve the destruction of rocks at or near the earth's surface. This is the broadest term referring to surficial rock destruction. It embraces work performed by passive or motionless agents (weathering) and work performed by moving agents, such as running water, glacial ice, waves, and wind. It may be used correctly for rock destruction on the land or on the sea floor. Thus, we may speak of erosion of the sea floor by waves or by submarine currents, and of the erosion of rocks, exposed on land, by moving ice or by alternate contraction and expansion due to heating and cooling, etc., etc. While it must connote transportation and may connote deposition, it should not be used to include these dependent processes.

"Denudation," by derivation, refers specifically to *stripping* or *laying bare*. It is often used in the sense of natural removal of soil or mantle rock from underlying solid rock, or removal of one rock formation from one lying below. It refers to erosional processes which are destructional, and like erosion should not be used to denote transportation or deposition. Almost, if not quite, without exception, "denudation" refers to stripping (erosion) only on land, whether it is on a small scale or on a large scale.

"Corrasion" is mechanical erosion performed by moving agents such as wear by glacial ice, by wind, by running water, etc.

"Corrosion" is most commonly used for chemical erosion, whether accomplished by motionless or moving agents.

I have suggested the foregoing definitions always having in mind that the "rock" eroded

may be consolidated or unconsolidated and that corrasion is accomplished largely by virtue of sand, silt, or other rock debris carried by the moving agent of erosion.

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May 11, 1921

THE BREEDING HABITS OF AMBYSTOMA TIGRINUM

THE eggs of *Ambystoma tigrinum* are usually described as occurring in small clumps. This is typical of the species in the eastern part of its range. While collecting in Colorado at an altitude between 6,000 and 7,000 feet, I found eggs of *tigrinum* laid singly. When first laid the egg resembles that of *Diemictylus*. As development continues the outer envelope becomes swollen until at the time of hatching its diameter is one half to three quarters of an inch. The eggs are attached to vegetation or debris. The depth varies from a few inches to two feet. On one occasion adults brought into the laboratory laid freely.

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A PHENOMENAL SHOOT

AN extraordinary water-shoot, discovered by Mrs. B. W. Wells, near the city of Raleigh, N. C., on March 21, 1920, is of such unusual size as to deserve recording. The shoot sprang from the side of the trunk of a be-headed tree of *Paulownia tomentosa* (Thunb.) Steud. and grew in one season (1919) to the length of 19 feet, 5 inches. Twenty internodes were formed, the longest of the shoot, located a little below the middle of the shoot, measures 19 inches in length. The base of the shoot is 7.75 inches in circumference and 2.5 inches in diameter. Branton in Bailey's Encyclopedia of Horticulture gives 14 feet as a maximum length of *Paulownia* shoots growing from the root after winter killing. The shoot recently discovered, exceeding this by 5 feet, 5 inches, is believed to be a record for